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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,466	02/23/2004	Kyle K. Kirby	108298749US	8567
25096	7590	02/22/2006	EXAMINER	
PERKINS COIE LLP			LIVEDALEN, BRIAN J	
PATENT-SEA				
P.O. BOX 1247			ART UNIT	
SEATTLE, WA 98111-1247			2878	
			PAPER NUMBER	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

E/L

Office Action Summary	Application No.	Applicant(s)	
	10/785,466	KIRBY, KYLE K.	
	Examiner	Art Unit	
	Brian J. Livedalen	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/17/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/28/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to amendment filed 1/17/2006. Claims 1-60 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5, 9, 11, 13-18, 24-27, 29, 30, 34, 36, 38-41, 43, 46, 47, 49, 50, 53, 55, and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (6503780) in view of Chung et al. (5932875).

In regard to claims 1, 26, 40, and 46, Glenn discloses (fig. 14) a microelectronic imaging unit and method containing a microelectronic die (102) have a first side, a second side opposite the first, and a perimeter having end surfaces; an image sensor (104) on the first side, an integrated circuit (102) in the die and electrically coupled to the image sensor, and a plurality of bond-pads (106) on the first side of the die and electrically coupled to the integrated circuit (column 7, lines 18-35); a single unitary cover unit over the image sensor, the cover unit having a window (110); and the side member (1418) projecting from the window, the side member being attached to the die; and electrically conductive interconnects (1406) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically

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coupled to corresponding bond-pads. Glenn further discloses a wafer forming a plurality of microelectronic imaging units (abstract). Glenn fails to disclose the window and side member being an integral piece made of the same material. However, Chung discloses an integrated package with a cover unit that is a single piece made from the same material (column 3, lines 25-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the window and side member integral and out of the same material to simplify the manufacturing process. Note, the method of manufacturing is inherent from the structure set forth above.

In regard to claims 15 and 57, Glenn discloses (fig. 14) a microelectronic imaging unit and method containing a microelectronic die (102) have a first side, a second side opposite the first, and a perimeter having end surfaces; an image sensor (104) on the first side, an integrated circuit (102) in the die and electrically coupled to the image sensor, and a plurality of bond-pads (106) on the first side of the die and electrically coupled to the integrated circuit (column 7, lines 18-35); a single unitary cover unit over the image sensor, the cover unit having a window (110); and the side member (1418) projecting from the window, the side member being attached to the die; and electrically conductive interconnects (1406) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically coupled to corresponding bond-pads. Glenn further discloses a wafer forming a plurality of microelectronic imaging units (abstract). Glenn fails to disclose the window and side member being made of the same material. However, Chung discloses an integrated

package with a cover unit made from the same material (column 3, lines 25-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the window and side member out of the same material to simplify the manufacturing process. Note, the method of manufacturing is inherent from the structure set forth above.

In regard to claims 2, 16, 27, 41, 47, and 58, Glenn discloses that the side member is attached to a portion of the perimeter of the die.

In regard to claims 4, 17, 29, 43, 49, and 59, Glenn discloses that the cover unit encloses the first side of the die and at least a portion of the perimeter of the die, the cover unit being configured to seal the first side of the die and at least a portion of the perimeter of the die.

In regard to claims 5, 18, 30, and 50, Glenn discloses that the cover unit encloses at least a portion of the first side of the die and the perimeter of the die; and the imaging unit further having an encapsulant (1430) disposed on the second side of the die.

In regard to claims 9, 11, 13, 24, 34, 36, 38, and 55, Glenn discloses (fig. 14) that the individual interconnects have a first end portion and a second end portion spaced apart from the first end portion; corresponding terminals are coupled to the first end portions of each interconnect; the interconnects extend through the cover unit; and the imaging unit further has a plurality of ball-pads (1214a) connected to the interconnects. Glenn does not disclose the ball-pads being on the opposite side of the cover unit.

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However Glenn discloses in figure 12 the ball-pads being on the second side of the cover unit and coupled to corresponding second end portions of the interconnects (column 18, lines 25-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the unit as taught by Glenn in figure 12 in order to make the unit more compact.

In regard to claims 14, 25, and 39, Glenn discloses the cover unit includes materials transmissive to a desired radiation (column 5, lines 57-60).

In regard to claim 53, Glenn in view of Chung discloses the cover unit being unitary.

Claims 3, 6, 28, 31, 42, 48, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (6503780) in view of Chung et al. (5932875) as applied to claims 1, 26, 40, and 46, and in further view of Glenn et al. (6734419) hereinafter referenced as Glenn '419.

In regard to claims 3, 6, 28, 31, 42, 48, and 51, Glenn in view of Chung discloses a microelectric imaging unit with an encapsulant disposed on the second side of the die as set forth above. Glenn in view of Chung fail to disclose the cover unit only enclosing the first side of the die. However, Glenn '419 discloses (fig. 2b) a microelectronic imaging unit with a cover (101) that only covers or encloses the first side of the die (111). It would have been obvious to one of ordinary skill in the art at the time the invention was made to only cover the first side of the die in order to most effectively reduce the size of the unit.

Claims 7, 8, 19, 20, 32, 33, 44, 45, 52, 54, 56, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (6503780) in view of Chung et al. (5932875) as applied to claims 1, 15, 26, 40, 46, and 57, and in further view of Loh et al. (6762472).

In regard to claims 7, 8, 19, 20, 32, 33, 44, 45, 52, 54, 56, and 60, Glenn in view of Chung discloses a microelectric imaging unit as set forth above. Glenn in view of Chung fails to disclose the unit having an integral optic member. However, Loh discloses (fig. 1) a microelectronic unit with a cover (132) and an integral optic element (134) (column 5, lines 10-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an integral optic element in order to more effectively focus the incoming light, thus increasing the accuracy of the imaging unit.

Claims 10, 12, 21-23, 35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (6503780) in view of Chung et al. (5932875) as applied to claims 1, 15, 26, 40, 46, and 57, and in further view of Choi (5753857).

In regard to claims 10, 12, 21-23, 35, and 37, Glenn in view of Chung discloses a microelectric imaging unit as set forth above. Glenn in view of Chung fails to disclose the interconnects going through the die and ball-pads placed on the second side of the

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die. However, Choi discloses (fig. 2) a microelectric imaging unit with a die (17) and interconnects (17b) extending through the die connected to ball-pads on the second side of the die (column 2, lines 35-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to extend the interconnects through the die to the ball-pads in order to make the unit more compact.

Response to Arguments

Applicant's arguments with respect to claims 1-60 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Livedalen whose telephone number is (571) 272-2715. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bjl


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